

**WHAT IS CLAIMED IS:**

1. A system for allowing a user to obtain comprehensive vehicle radio listener statistics within a specific market, comprising:

a plurality of vehicles, wherein a vehicle-mounted field unit is coupled to the radio of each of said plurality of vehicles;

means, within each of said plurality of vehicle-mounted field units, for receiving global positioning system data indicative of position and time information of each of said plurality of vehicles;

a base station server capable of receiving radio parameter information from each of said plurality of vehicle-mounted field units located in each of said plurality of vehicles, and producing statistics based on said received radio parameter information;

a communications means for facilitating two-way communications between said base station server, and said plurality of vehicle-mounted field units; and

a graphical user interface (GUI), provided by said base station server, in order to deliver reports to the user containing said statistics based on said received radio parameter information.

2. The system of Claim 1, wherein said radio parameter information includes global positioning system coordinates and at least one of the following: radio status; station preset information; and current frequency setting.

3. The system of Claim 1, wherein said radio parameter information includes a volume percentage reading and global positioning system coordinates.

4. The system of Claim 1, wherein at least a portion of said communications means for facilitating two-way communications includes at least one of the following: satellite communications; code division multiple access (CDMA) communications; time division multiple access (TDMA) communications; and  
5 Bluetooth® wireless communications.

5. The system of Claim 1, wherein at least a portion of said communications means for facilitating two-way communications includes at least one of the following: pager communications, satellite communications; cellular telephone communications; and wireless broadband communications.

10 6. The system of Claim 1, wherein said GUI is provided by said base station server to the user over at least a portion of the global Internet.

7. A method for allowing a user to obtain comprehensive vehicle radio listener statistics within a specific market, comprising the steps of:

receiving, via a two-way communications network, time and global  
15 positioning system coordinate data from a vehicle-mounted field unit coupled to the radio of a vehicle;

receiving, via said two-way communications network, radio parameter information from said vehicle-mounted field unit located in said vehicle;

20 producing statistics based on said received radio parameter information and said received time and global positioning system coordinate data; and

delivering, via a graphical user interface (GUI), a report to the user containing said statistics based on said received radio parameter information and said received time and global positioning system coordinate data.

8. The method of Claim 7, further comprising the step of:

25 sending an acknowledgment to said vehicle-mounted field unit located in said vehicle via said two-way communications network.

9. The method of Claim 7, wherein said radio parameter information includes at least one of the following: radio status; station preset information; and current frequency setting.

10. The method of Claim 7, wherein said radio parameter information includes  
5 a volume percentage reading and global positioning system coordinates.

11. The method of Claim 7, wherein at least a portion of said two-way  
communications network includes at least one of the following: satellite  
communications; code division multiple access (CDMA) communications; time  
division multiple access (TDMA) communications; and Bluetooth® wireless  
10 communications.

12. The method of Claim 7, wherein at least a portion of said two-way  
communications network includes at least one of the following: pager  
communications, satellite communications; cellular telephone communications;  
and wireless broadband communications.

13. The method of Claim 7, wherein said GUI is provided to the user over at  
15 least a portion of the global Internet.

14. The method of Claim 7, wherein said receiving radio parameter information  
from said vehicle-mounted field unit step is performed periodically on a  
pre-determined time interval.

15. A computer program product comprising a computer usable medium having control logic stored therein for causing a computer to allow a user to obtain comprehensive vehicle radio listener statistics within a specific market, said control logic comprising:

5 first computer readable program code means for causing the computer to receive, via a two-way communications network, time and global positioning system coordinate data from a vehicle-mounted field unit attached to the radio of a vehicle;

10 second computer readable program code means for causing the computer to receive, via said two-way communications network, radio parameter information from said vehicle-mounted field unit located in said vehicle;

third computer readable program code means for causing the computer to produce statistics based on said received radio parameter information and said received time and global positioning system coordinate data; and

15 fourth computer readable program code means for causing the computer to deliver, via a graphical user interface (GUI), a report to the user containing said statistics based on said received radio parameter information and said received time and global positioning system coordinate data.

20 16. The computer program product of Claim 15, wherein said radio parameter information includes at least one of the following: radio status; station preset information; and current frequency setting.

17. The computer program product of Claim 15, wherein said radio parameter information includes a volume percentage reading and global positioning system coordinates.

18. The computer program product of Claim 15, wherein at least a portion of said two-way communications network includes at least one of the following: satellite communications; code division multiple access (CDMA) communications; time division multiple access (TDMA) communications; and wireless communications.

19. The computer program product of Claim 15, wherein said GUI is provided to the user over at least a portion of the global Internet.

20. The computer program product of Claim 15, further comprising:  
fifth computer readable program code means for causing the computer to send an acknowledgment to said vehicle-mounted field unit located in said vehicle via said two-way communications network.

21. An apparatus for detecting the tuned station of a radio tuner connected to an antenna and a speaker, comprising:
  - a directional coupler that is coupled in between the antenna and the radio tuner;
  - 5 a modulator coupled to said directional coupler;
  - a processor connected to said modulator and coupled between the radio tuner and the speaker;
  - said modulator comprising:
    - an FM code modulator for generating a coded signal having a pre-
    - 10 determined FM modulation frequency;
    - an AM code modulator for generating a coded signal having a pre-determined AM modulation frequency;
    - an FM synthesizer for creating an FM test signal by generating an FM carrier frequency signal corresponding to an FM station under test and receiving said coded signal injected into said carrier frequency signal by said FM
    - 15 code modulator, and capable of injecting said FM test signal into the radio tuner via said directional coupler; and
    - an AM synthesizer for creating an AM test signal by generating an AM carrier frequency signal corresponding to an AM station under test and receiving said coded signal injected into said carrier frequency signal by said AM
    - 20 code modulator, and capable of injecting said AM test signal into the radio tuner via said directional coupler; and
    - said processor comprising:
      - a code correlator for analyzing signals received from the speaker
      - 25 output of the radio tuner to determine whether said FM or AM coded signal is recoverable from said received signal, thereby indicating the radio tuner is tuned to said FM or AM station under test.

22. The apparatus of Claim 21, wherein said pre-determined FM modulation frequency is between 1 and 10 kHz.
23. The apparatus of Claim 21, wherein said pre-determined AM modulation frequency is between 1 and 10 kHz.
- 5 24. The apparatus of Claim 21, further comprising:  
a band pass filter, located within said processor, for filtering low and high frequency components of signals received from the speaker output of the radio tuner before said code correlator analyzes said received signals.
25. The apparatus of Claim 21, wherein said processor further comprises:  
10 a memory for storing a list of station carrier frequencies to be tested.
26. The apparatus of Claim 25, wherein said processor further comprises:  
a null detector capable of detecting a tuning pause in the speaker output of the radio tuner and notifying said processor when to test for the radio being tuned to one of the station carrier frequencies stored in said list.
- 15 27. The apparatus of Claim 25, further comprising:  
a second directional coupler that is coupled in between the antenna and the radio tuner; and  
an auxiliary tuner, coupled to said processor and second directional coupler, that scans the entire broadcast range of the radio tuner to identify said list  
20 of station carrier frequencies to be tested and stores said list in said memory of said processor.

28. A method for detecting the tuned station of a tuner connected to an antenna and a speaker, comprising the steps of:

(1) monitoring the speaker output of the tuner by taking a sample of said output, said sample being taken once every pre-determined time interval;

5 (2) determining whether a consecutive, pre-determined number of said samples are indicative of a tuning pause, and performing the following steps when said determination is positive:

(a) selecting a station carrier frequency to be tested;

10 (b) generating a pre-determined coded signal having a pre-determined modulation frequency;

(c) creating a test signal by injecting said coded signal into a carrier frequency signal corresponding to said station carrier frequency under test;

(d) injecting said test signal into the tuner; and

15 (e) receiving a signal from the speaker output of the tuner and determining whether said coded signal is recoverable from said received signal;

whereby recovering said coded signal indicates that the tuner is tuned to the station carrier frequency being tested.

29. The method of Claim 28, wherein steps (a)-(e) are repeated for a list of previously-identified station carrier frequencies to be tested until the determination  
20 of step (e) is positive.

30. The method of Claim 28, wherein said pre-determined modulation frequency is between 1 and 10 kHz.

31. The method of Claim 30, wherein said pre-determined time interval is equal to the inverse of said pre-determined modulation frequency.



32 The method of Claim 28, wherein step (e) comprises the steps of:

(i) filtering said signal received from the speaker output of the tuner for noise in order to produce a filtered signal; and

(ii) determining whether said filtered signal contains a coded signal that  
5 matches, within a pre-determined threshold, said coded signal generated in step  
(b).

33. The method of Claim 32, wherein said pre-determined threshold is at least 90%.

34. A computer program product comprising a computer usable medium having control logic stored therein for causing a computer to detect the tuned station of a tuner connected to an antenna and a speaker, said control logic comprising:

5 first computer readable program code means for causing the computer to monitor the speaker output of the tuner by taking a sample of said output, said sample being taken once every pre-determined time interval;

second computer readable program code means for causing the computer to determine whether a consecutive, pre-determined number of said samples are  
10 indicative of a tuning pause;

third computer readable program code means for causing the computer to select a station carrier frequency to be tested;

fourth computer readable program code means for causing the computer to generate a pre-determined coded signal having a pre-determined modulation  
15 frequency;

fifth computer readable program code means for causing the computer to create a test signal by injecting said coded signal into a carrier frequency signal corresponding to said station carrier frequency under test;

sixth computer readable program code means for causing the computer to  
20 inject said test signal into the tuner; and

seventh computer readable program code means for causing the computer to receive a signal from the speaker output of the tuner and determining whether said coded signal is recoverable from said received signal;

whereby recovering said coded signal indicates that the tuner is tuned to the  
25 station carrier frequency being tested.

35. The computer program product of Claim 34, wherein said seventh computer readable program code means comprises:

5 eighth computer readable program code means for causing the computer to filter said signal received from the speaker output of the tuner for noise in order to produce a filtered signal; and

ninth computer readable program code means for causing the computer to determine whether said filtered signal contains a coded signal that matches, within a pre-determined threshold, said coded signal generated by said fourth computer readable program code means.

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